Title: REMOTE ACCESS SYSTEM, REMOTE ACCESS METHOD, AND REMOTE ACCESS PROGRAM
Inventor: Shinako Matsuyama
App. No.: Unknown
Docket No.: 112857-411
Firm/Attorney: Bell, Boyd & Lloyd, LLC/B. Joe Kim
Telephone No.: (312) 807-4354

FIG. 1

ITEM	DESCRIPTION
Version 1	
version	VERSION OF FORMAT OF CERTIFICATE
serial Number	SERIAL NUMBER OF CERTIFICATE, SPECIFIED BY CERTIFICATION AUTHORITY
signature algorithm Identifier algorithm parameters	SIGNATURE ALGORITHM AND ITS PARAMETERS OF CERTIFICATE
issuer	NAME OF CERTIFICATION AUTHORITY (IN DISTINGUISHED NAME FORMAT)
validity not Before not After	EFFECTIVE PERIOD OF CERTIFICATE START DATE END DATE
subject	NAME FOR IDENTIFYING USER
subject Public Key Info algorithm subject Public key	PUBLIC-KEY INFORMATION OF USER KEY ALGORITHM KEY INFORMATION
Version 3	
authority Key Identifier key Identifier authority Cert Issuer authority Cert Serial Number	FOR IDENTIFYING KEY USED FOR VERIFYING SIGNATURE OF CERTIFICATION AUTHORITY KEY IDENTIFICATION NUMBER (IN OCTAL) NAME OF CERTIFICATION AUTHORITY (IN GENERAL NAME FORMAT) AUTHENTICATION NUMBER
subject key Identifier	IDENTIFIER OF EACH KEY, USED WHEN PLURALITY OF KEYS ARE CERTIFIED
key usage (0)digital Signature (1)non Repudiation (2)key Encipherment (3)data Encipherment (4)key Agreement (5)key Cert Sign (6)CRL Sign (7)encipher Only (8)decipher Only	FOR SPECIFYING USE OBJECTIVE OF KEY (0) FOR DIGITAL SIGNATURE (1) FOR REPUDIATION PREVENTION (2) FOR ENCRYPTING KEY (3) FOR ENCRYPTING MESSAGE (4) FOR DISTRIBUTING COMMON KEY (5) FOR VERIFYING SIGNATURE IN AUTHENTICATION (6) FOR VERIFYING SIGNATURE IN INVALIDITY LIST (7) ONLY FOR ENCRYPTING DATA WHEN KEY IS CHANGED (8) ONLY FOR DECRYPTING DATA WHEN KEY IS CHANGED
private Key Usage Period not Before not After	EFFECTIVE PERIOD OF PRIVATE KEY HELD BY USER

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FIG. 2

Certificate Policy policy Identifier policy Qualifiers	CERTIFICATE ISSUING POLICY OF CERTIFICATION AUTHORITY POLICY ID AUTHENTICATION STANDARD
policy Mappings issuer Domain Policy subject Domain Policy	REQUIRED ONLY FOR AUTHENTICATING CERTIFICATION AUTHORITY. SPECIFIES MAPPING BETWEEN POLICY OF CERTIFICATION AUTHORITY AND POLICY OF OBJECT TO BE AUTHENTICATED
supported Algorithms algorithm Identifier intended Usage intended Certificate Policies	DEFINES ATTRIBUTE OF DIRECTORY (X.500). USED FOR REPORTING ATTRIBUTE IN ADVANCE WHEN COMMUNICATION MATE USES DIRECTORY INFORMATION
subject Alt Name	ALIAS OF USER (IN GENERAL NAME FORMAT)
issuer Alt Name	ALIAS OF CERTIFICATE ISSUER
subject Directory Attributes	ANY ATTRIBUTE OF USER
basic Constraints CA path Len Constraint	DETERMINES WHETHER PUBLIC KEY TO BE CERTIFIED IS FOR SIGNATURE OF CERTIFICATION AUTHORITY OR USER'S
name Constraints permitted Subtrees base minimum maximum excluded Subtrees	USED ONLY WHEN PARTY TO BE AUTHENTICATED IS CERTIFICATION AUTHORITY (CA AUTHENTICATION)
policy Constraints require Explicit Policy inhibit Policy Mapping	DESCRIBES CONSTRAINT WHICH REQUESTS A CLEAR AUTHENTICATION POLICY ID FOR REMAINING AUTHENTICATION PATH OR PROHIBITION POLICY MAP
CRL Distribution Points	DESCRIBES REFERENCE POINT IN INVALIDATION LIST USED, WHEN USER USES CERTIFICATE, FOR CHECKING IF CERTIFICATE HAS NOT LAPSED
SIGNATURE	SIGNATURE OF ISSUER

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FIG. 3

ITEM						DESCRIPTION
acinfo	AttributeCertificateInfo					
	version	AttCertVersion				VERSION OF FORMAT OF ATTRIBUTE CERTIFICATE
	holder	Holder				IDENTIFIES OWNER OF PUBLIC-KEY CERTIFICATE WITH WHICH ATTRIBUTE CERTIFICATE IS ASSOCIATED
		baseCeretificateID	issuerSerial			
			issuer			NAME OF ISSUER OF PUBLIC-KEY CERTIFICATE OF OWNER OF ATTRIBUTE CERTIFICATE
			serial			SERIAL NUMBER OF ISSUER OF PUBLIC-KEY CERTIFICATE OF OWNER OF ATTRIBUTE CERTIFICATE
			issuerUID			UNIQUE IDENTIFIER OF ISSUER OF PUBLIC-KEY CERTIFICATE OF OWNER OF ATTRIBUTE CERTIFICATE
		entityName				NAME OF OWNER OF ATTRIBUTE CERTIFICATE
		objectDigestInfo	objectDigestInfo			ASSUMING THAT ATTRIBUTE CERTIFICATE IS NOT LINKED TO IDENTIFICATION INFORMATION OR PUBLIC-KEY CERTIFICATE IN FUTURE
				digestedObjectType		
				otherObjectTypeID		
				digestAlgorithm		
				objectDigest		
	issuer	AttCertIssuer				SPECIFIES NAME OF ISSUER WHO SIGNED ATTRIBUTE CERTIFICATE
		v2Form	V2Form			
			issurerName			NAME OF ISSUER OF ATTRIBUTE CERTIFICATE
				baseCertificateID		
				objectDigestInfo		
	signature	AlgorithmIdentifier				IDENTIFIER OF ALGORITHM USED FOR MAKING SIGNATURE OF ATTRIBUTE CERTIFICATE EFFECTIVE
	serialNumber	CertificateSerialNumber				SERIAL NUMBER ASSIGNED BY ATTRIBUTE AUTHORITY TO EACH CERTIFICATE
	attrCertValidityPeriod	AttCertValidityPeriod				EFFECTIVE PERIOD OF ATTRIBUTE CERTIFICATE
		notBefore				START DATE
		notAfter				END DATE

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FIG. 4

attributes	Attribute				INFORMATION RELATED TO PRIVILEGE OF OWNER OF ATTRIBUTE CERTIFICATE
	type	AttributeType			
			Service Authentication		DESCRIBES AUTHENTICATION INFORMATION RELATED TO SERVICE. USED WHEN VERIFIER OF ATTRIBUTE CERTIFICATE AUTHENTICATES OWNER
			service		
			ident		
			authInfo		
			Access Identity		ACCESS PERMISSION INFORMATION OF OWNER, USED BY VERIFIER OF ATTRIBUTE CERTIFICATE
			Charging Identity		INFORMATION FOR IDENTIFYING OWNER OF ATTRIBUTE CERTIFICATE FOR ACCOUNTING
			Group		BELONGING RELATION OF OWNER OF ATTRIBUTE CERTIFICATE, TO GROUP
			Role		ROLE ASSIGNED TO OWNER OF ATTRIBUTE CERTIFICATE
				roleAuthority	
				roleName	
			Clearance		INFORMATION RELATED TO USE PERMISSION OF CONFIDENTIAL INFORMATION, FOR OWNER OF ATTRIBUTE CERTIFICATE
				policyId	
				classList	
				securityCategories	
		values			
	issuerUniqueID	uniqueIdentifier			USED WHEN SPECIFIED BY PUBLIC-KEY CERTIFICATE OF ISSUER OF ATTRIBUTE CERTIFICATE
	extensinos				DESCRIBES NOT INFORMATION OF OWNER OF ATTRIBUTE CERTIFICATE BUT INFORMATION OF ATTRIBUTE CERTIFICATE
			Audit Identity		USED BY SERVER/SERVICE ADMINISTRATOR TO INSPECT OWNER OF ATTRIBUTE CERTIFICATE TO DETECT (SPECIFY) FRAUDULENT ACTIONS
			AC Targeting		DESCRIBES SERVER/SERVICE FOR WHICH ATTRIBUTE CERTIFICATE IS ISSUED
			Authority Key Identifier		KEY INFORMATION OF ISSUER OF ATTRIBUTE CERTIFICATE
			Authority Information Access		URI OF OCSP RESPONDER
			CRL Distribution Points		URI OF CRL DISTRIBUTION POINT
			No Revocation Available		INDICATES THAT THERE IS NO INVALIDITY INFORMATION CORRESPONDING TO ATTRIBUTE CERTIFICATE
			Proxy Info		ENTITY TO WHICH ATTRIBUTE CERTIFICATE CAN BE SUBMITTED
signature Algorithm	AlgorithmIdentifier				
signature Value					SIGNATURE ASSIGNED BY ATTRIBUTE AUTHORITY
Optional Features					

FIG. 5

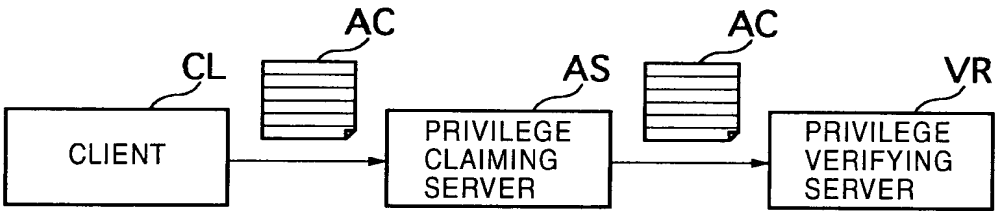
AC
AC
CL
AS
VR
CLIENT
PRIVILEGE CLAIMING SERVER
PRIVILEGE VERIFYING SERVER

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FIG. 6

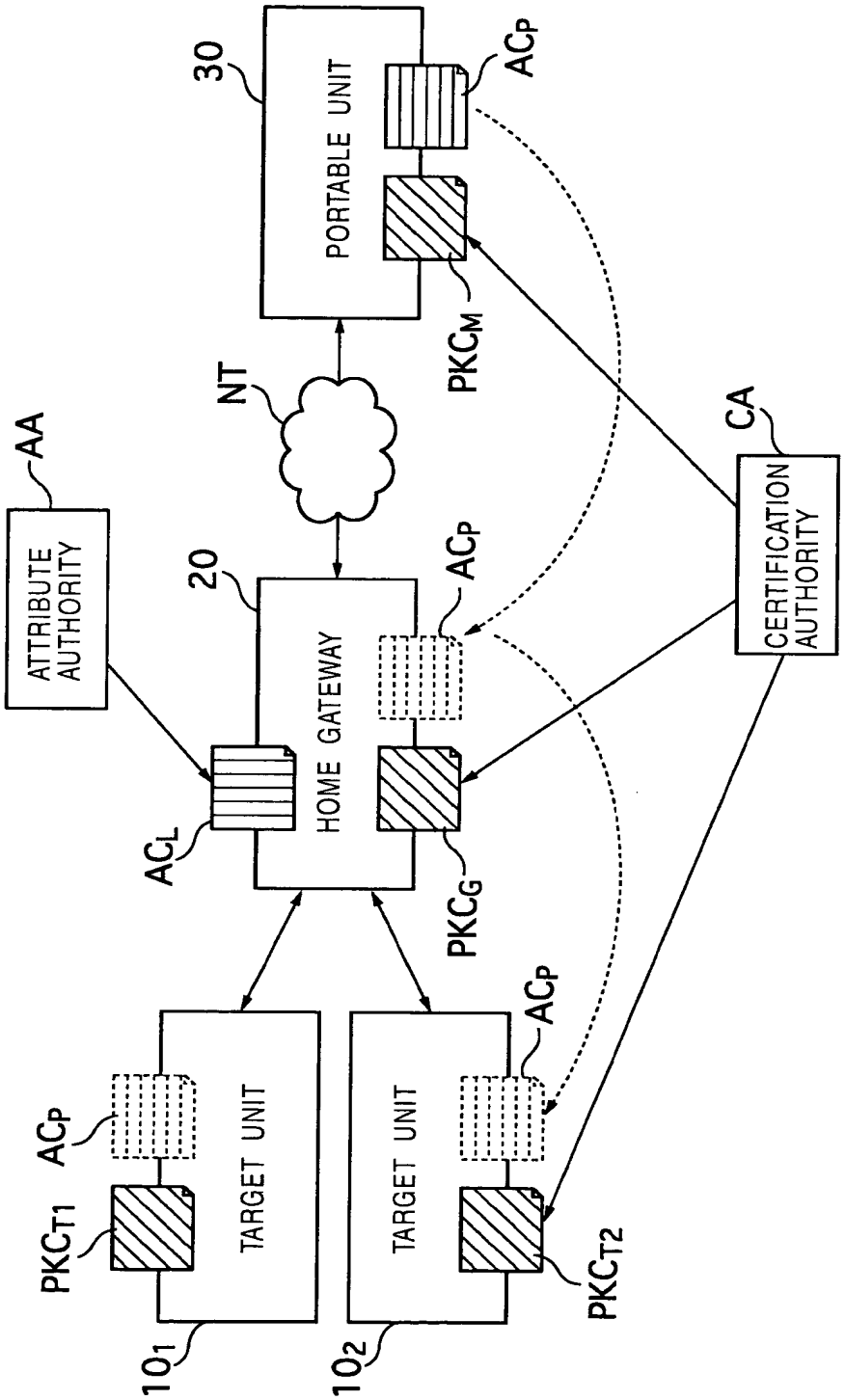

FIG. 7

ITEM	OID	VALUE
Service Authentication Information	id-aca 1	INFORMATION REQUIRED FOR SERVICE OR AUTHENTICATION
Access Identity	id-aca 2	OWNER IDENTIFIER USED WHEN OWNER ATTRIBUTE IS VERIFIED
Charging Identity	id-aca 3	ID USED FOR SERVICE ACCOUNTING
Group	id-aca 4	INFORMATION OF GROUP TO WHICH OWNER BELONGS
Role	id-at 72	NAME OF ROLE AUTHORITY, ROLE NAME

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FIG. 8

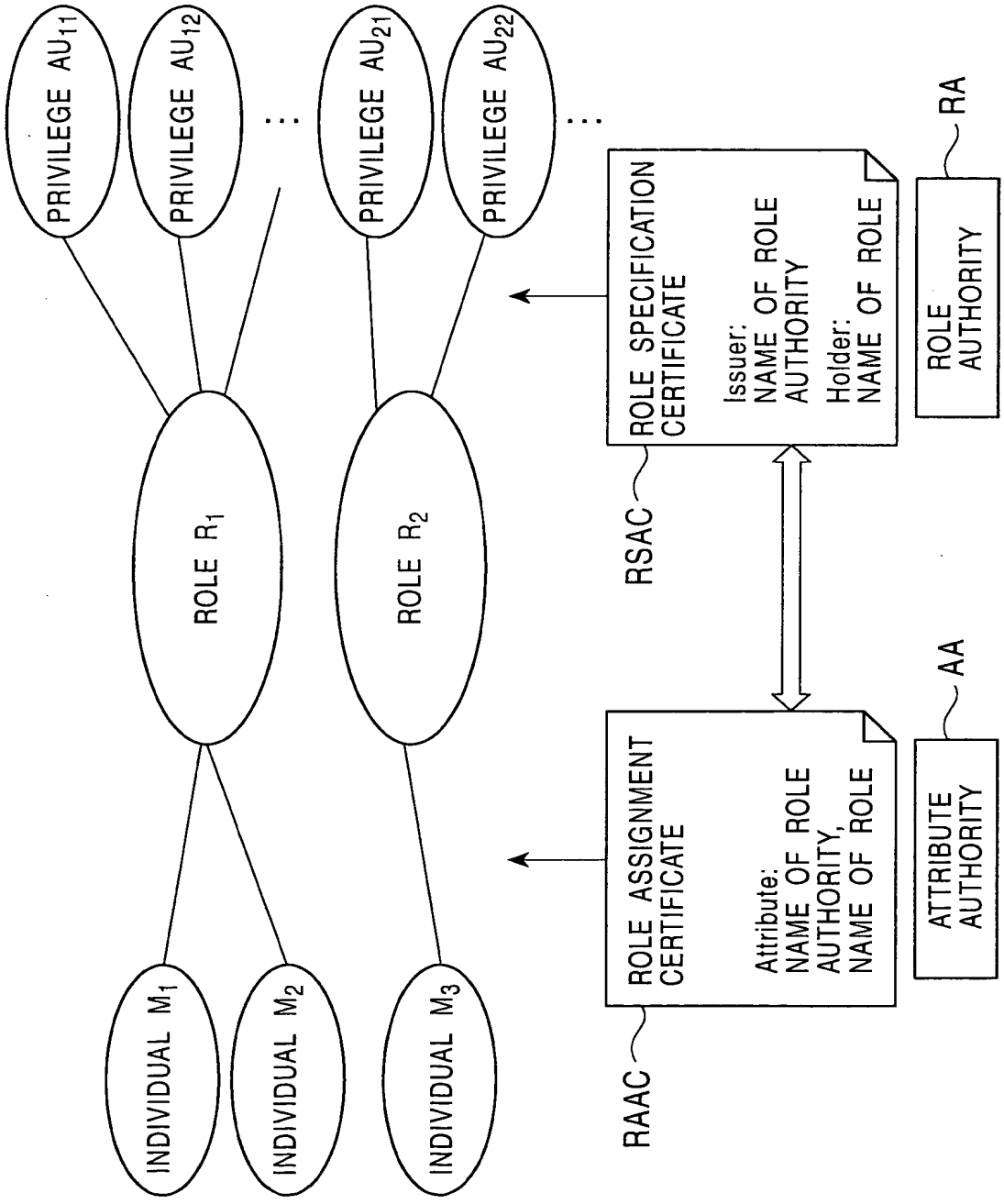

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FIG. 9

ITEM	OID	VALUE
Authority Information Access		ISSUER INFORMATION OF ATTRIBUTE CERTIFICATE, OCSP INFORMATION
Authority Key Identifier		PUBLIC-KEY INFORMATION OF ISSUER OF ATTRIBUTE CERTIFICATE
CRL Distribution Points		URI OF CRL DISTRIBUTION POINT
Audit Identity		ID OF OWNER OF ATTRIBUTE CERTIFICATE FOR INSPECTION (USED FOR TRACKING LOG. ANONYMOUS BUT CAN IDENTIFY OWNER TOGETHER WITH INFORMATION AT ATTRIBUTE AUTHORITY)
Time Specification		TIME ZONE WHEN PRIVILEGE IS EFFECTIVE
Targeting Information		SERVER NAME WITH WHICH ATTRIBUTE CERTIFICATE CAN BE RECEIVED
Proxy Info		POSSIBLE PROXY
User Notice		INFORMATION SENT TO PRIVILEGE OWNER AND PRIVILEGE INSPECTOR
PRIVILEGE POLICY		NAME OF policy authority, CHARACTER STRING OR OID VALUE
SOA (Source of Authority; ENTITY WHICH INSPECTOR TRUSTS, ROOT CA IN PKI, CORRESPONDING TO Trust anchor, TOP IN Delegation (Chain OF ATTRIBUTE AUTHORITY) (SINCE USUALLY, THERE IS ONLY ONE ATTRIBUTE AUTHORITY, ATTRIBUTE AUTHORITY IS SOA)		PRIVILEGE OF BEING ABLE TO SERVE AS SOA DESCRIPTION OF BEING SOA CERTIFICATE
PRIVILEGE TRANSFER		DESCRIBES TRANSFER CONDITION AND OTHERS REQUIRED WHEN PRIVILEGE IS TRANSFERRED TO ANOTHER ENTITY
DISCARD OF ATTRIBUTE		URI OF s DISTRIBUTION POINT
		DESCRIPTION OF NOT SUPPORTING INVALIDATION
Role		INDICATES ROLE CERTIFICATE (Role authority NAME AND ROLE NAME BY CHARACTER STRINGS)

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FIG. 10

```
                                    VALUE
OID id-pe 10 }                      1.3.6.1.5.5.7.1.10

ProxyInfo :: SEQUENCE OF Targets
Target :: = CHOICE {
        targetName[0] GeneralName,          EXAMPLE: ADDRESS OR IDENTIFIER
                                                     OF HOME GATEWAY
        targetGroup[1] GeneralName,
        targetCert[2] TargetCert            EXAMPLE: PUBLIC-KEY CERTIFICATE
                                                     OF HOME GATEWAY
}
TargetCert :: = SEQUENCE {
        targetCertificate IssuerSerial,
        targetName GeneralName OPTIONAL,
        certDigestInfo      ObjectDigestInfo OPTIONAL
}
```

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FIG. 11

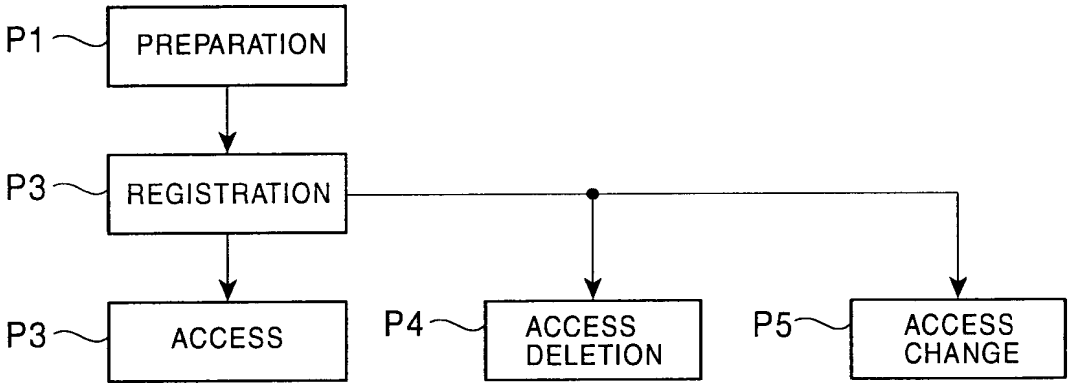

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FIG. 12

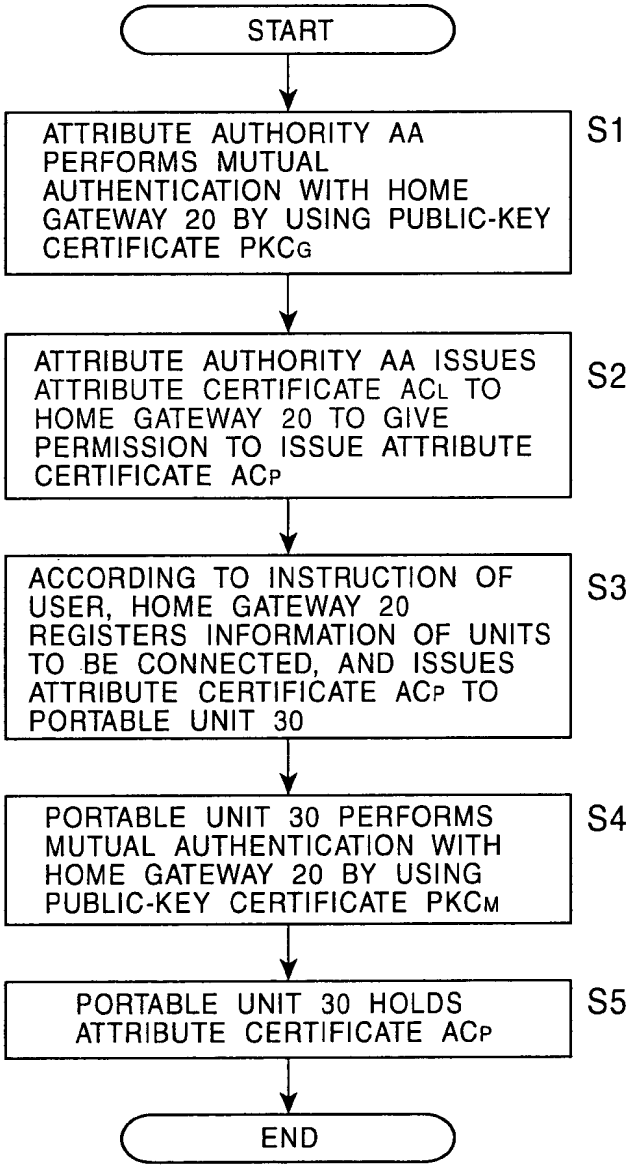

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FIG. 13

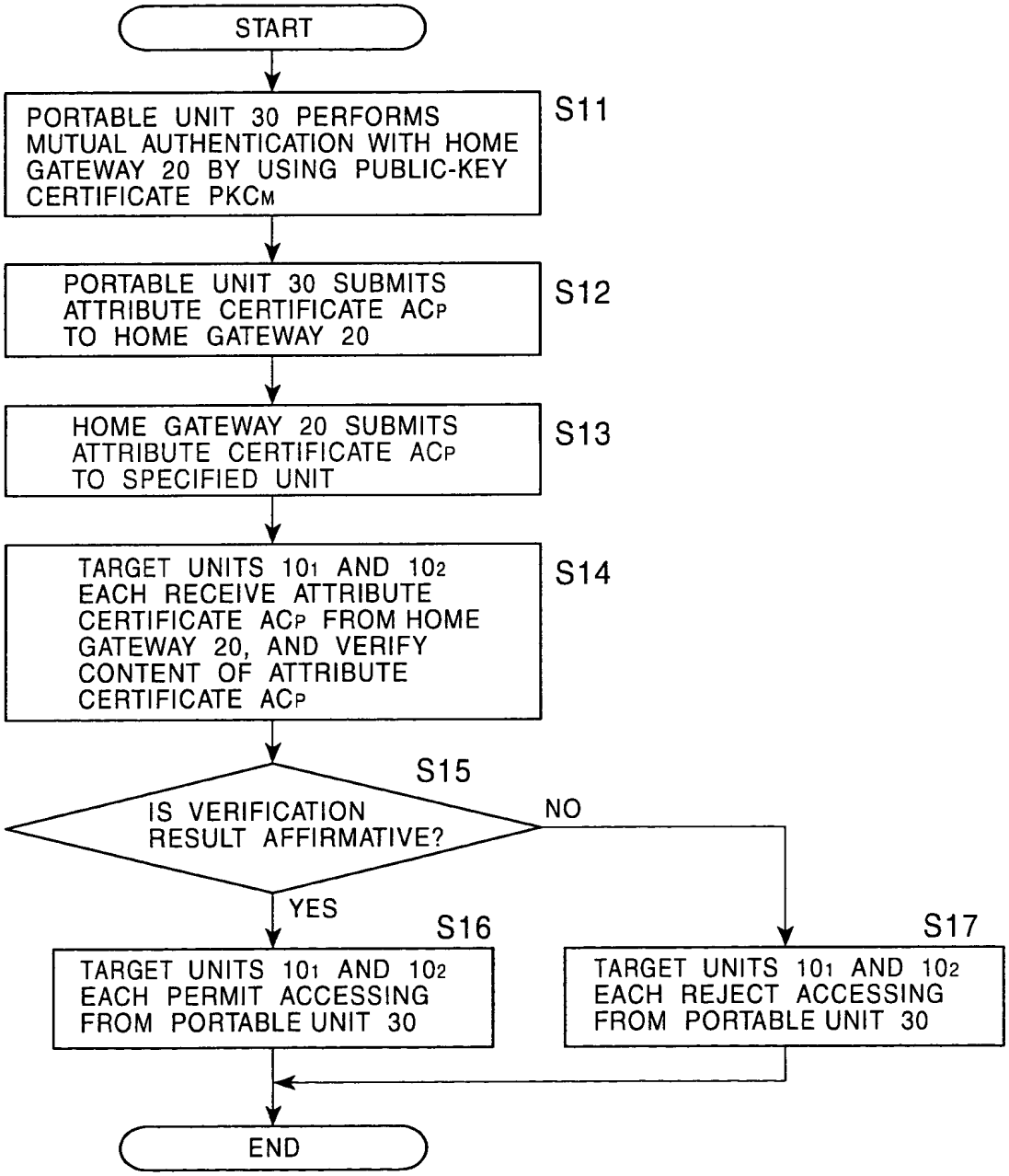

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FIG. 14

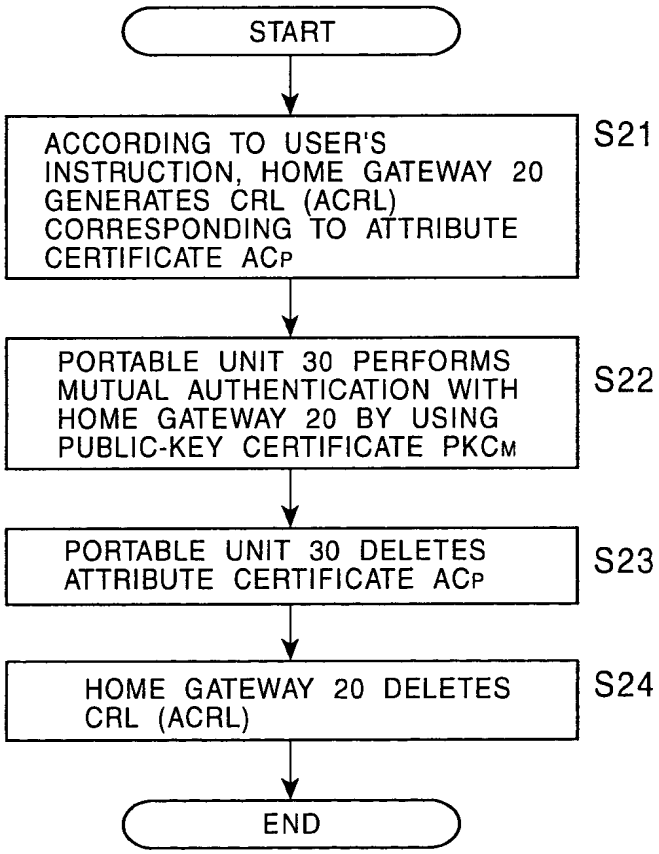

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FIG. 15

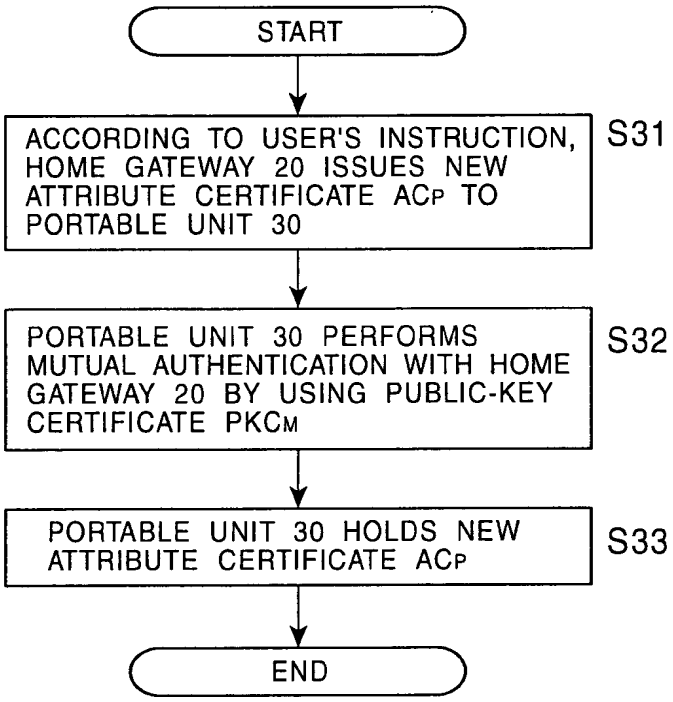

FIG. 16

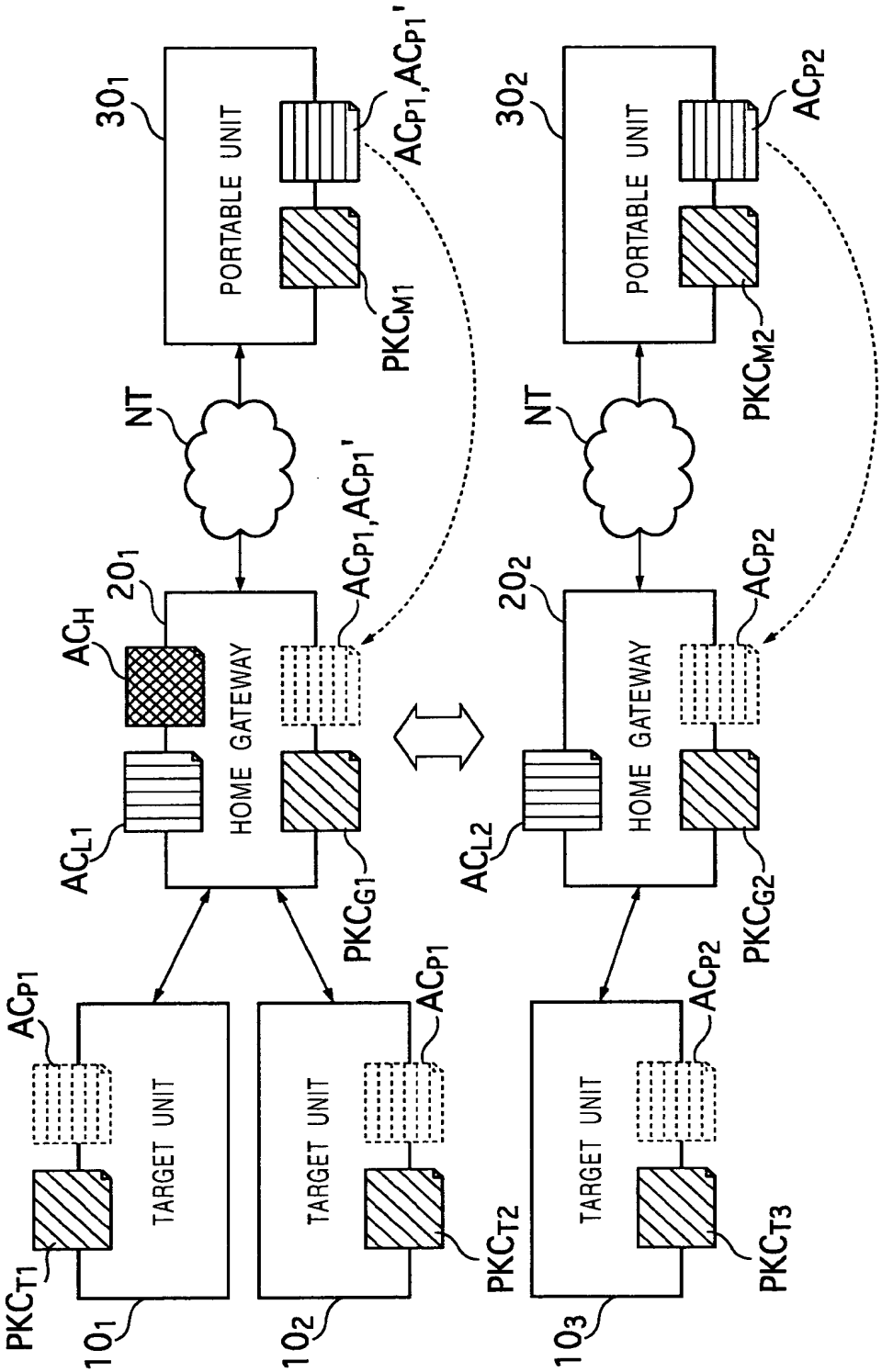
PORTABLE UNIT
HOME GATEWAY
TARGET UNIT
NT
30_1
30_2
20_1
20_2
10_1
10_2
10_3
AC_{P1}, AC_{P1}'
AC_{P2}
AC_H
AC_{L1}
AC_{L2}
PKC_{M1}
PKC_{M2}
PKC_{G1}
PKC_{G2}
PKC_{T1}
PKC_{T2}
PKC_{T3}

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FIG. 17

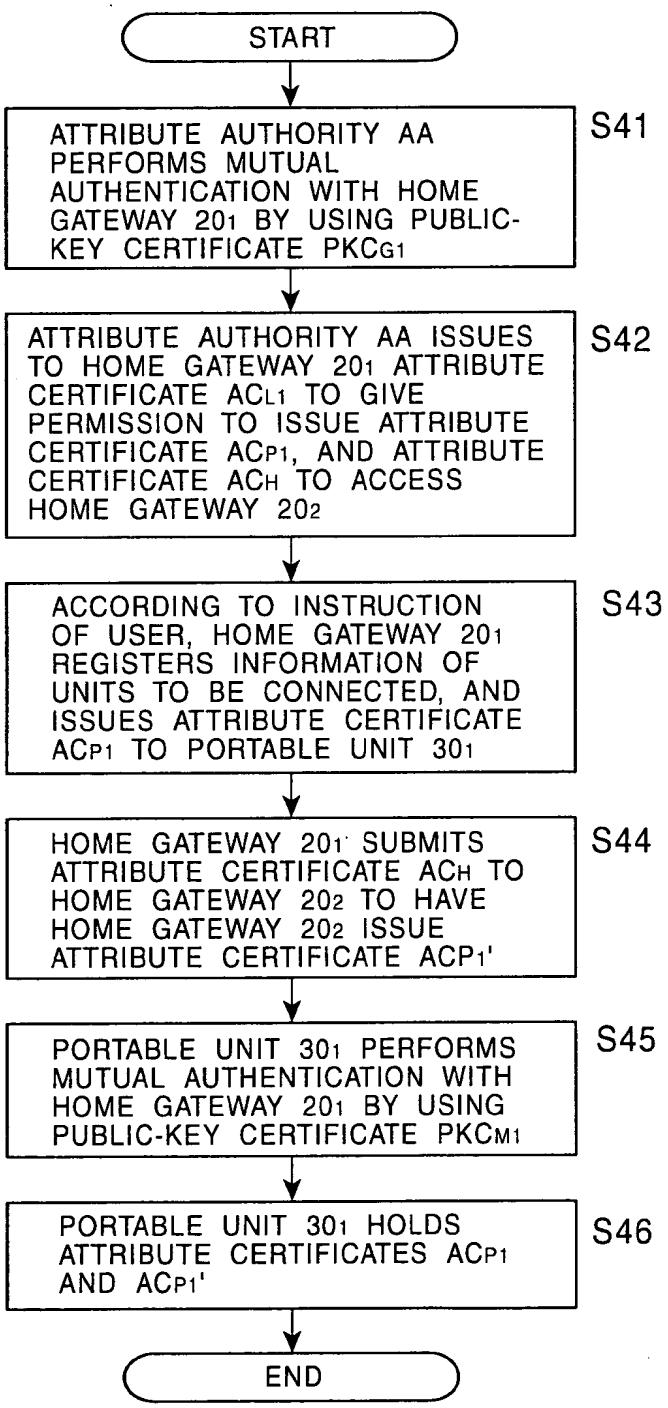

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FIG. 18

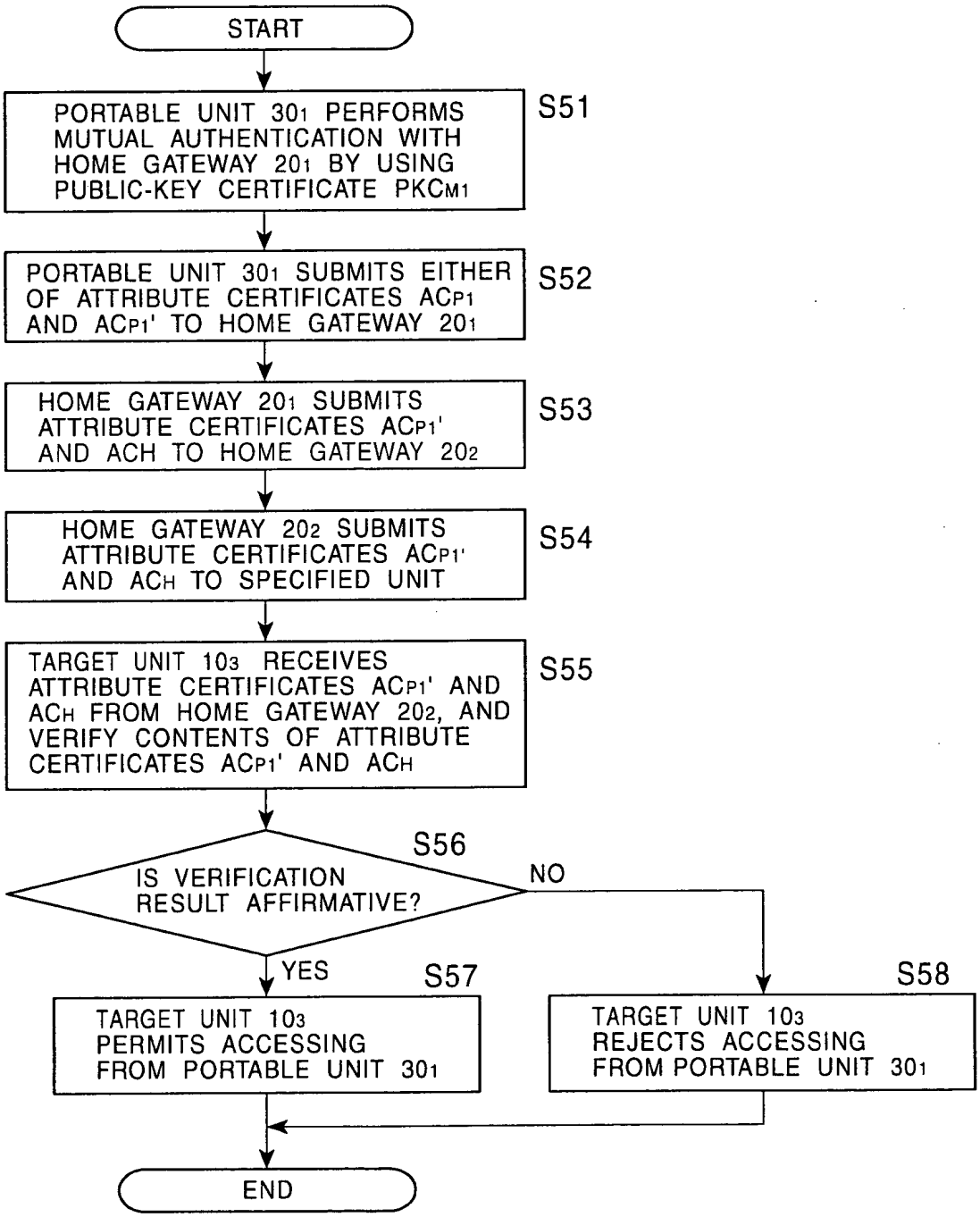

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FIG. 19

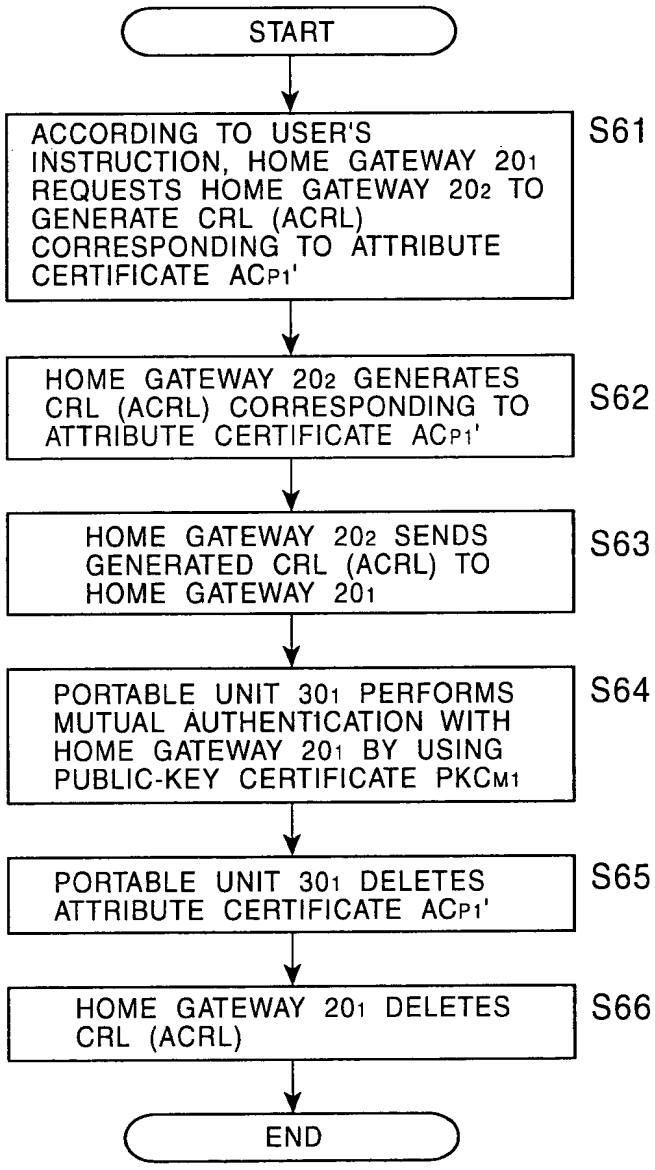

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FIG. 20